

CPC USE ONLY:
Application # FY14 - 1

Qualifies: _____

Does not qualify: _____

INITIAL ELIGIBILITY PROJECT APPLICATION FORM

DUE BY DECEMBER 1

TOWN OF NEEDHAM
COMMUNITY PRESERVATION COMMITTEE
c/o Park & Recreation Department
1471 Highland Avenue, Town Hall
Needham, MA 02492
www.needhamma.gov/CPC

1. Applicant: Town of Needham Conservation Commission Submission Date: July 31, 2013

2. Applicant's Address, Phone Number and Email:

3. Purpose:
(Please select all that apply)

PSAB 500 Dedham Avenue Needham, MA
Phone: 781.455.7550 x248
Email:pbarry@needhamma.gov
Contact Name: Patricia Barry

☐ Open Space
☐ Community Housing
☐ Historic Preservation
☒ Recreation

4. Project Name: Ridge Hill Reservation Swamp Trail Boardwalk Replacement & Charles River Trail Bridge Replacement Project

5. Project Location/Address/Ownership (Control):

Ridge Hill Reservation
463 Charles River Street
Assessors Map 306 Parcel 1

6. Amount Requested: \$183,219

7. Estimated Total Project Cost (If Different): \$298,719

(\$100,000 from the Conservation Commission Conservation Trust Fund will be used towards the construction costs & \$15,500 of previously approved CPA funding)

Please note that the design, permitting and construction of this project were already approved by the CPC in the amount of \$58,000. \$38,000 has been expended on design and permitting including soil borings. Design changed to extend boardwalk for full length of the trail, and a different design of the structure was selected to minimize damage to the wetland in accordance with both state and local regulations. It is anticipated that an additional \$4,500 may be required for construction oversight and Architectural Access Board variance leaving \$15,500 of the originally approved \$58,000 towards construction costs. The Conservation Commission is now requesting the remaining funding for the full trail construction.

| | |
|-------------------|---------------|
| CPC USE ONLY: | |
| Application # | <u>FY14-1</u> |
| Qualifies: | _____ |
| Does not qualify: | _____ |

- continued -

8. **Critical Dates:** *(If Applicable)* The Conservation Commission anticipates a January 2014 commencement of the construction procurement process, selection of a construction contractor in the Spring 2014 and construction in Summer 2014. It is crucial to start construction at the end of the summer when the water table is the lowest for the most practicable, least intrusive and cost effective installation of the Swamp Trail Boardwalk and Charles River Trail Bridge.

Project Name: Ridge Hill Reservation Swamp Trail Boardwalk Replacement & Charles River Trail Bridge Replacement Project

9. **Project Summary: In 100 words or less provide a brief summary of the project:**

The Swamp Trail is a critical link in the Ridge Hill Reservation trail network that extends across a forested wetland, and is the only connection between the east and west trails. In order to cross the wettest part of the swamp, the Swamp Trail is elevated on a boardwalk. The Charles River Trail extends from Charles River Street to the Charles River, and crosses a brook that contains a small bridge. These structures were constructed more than 20 years ago, and have failed due to decay, and need to be replaced in order to maintain public access. In accordance with the Trails Master Plan the proposed project would reconstruct the boardwalk and bridge to maintain these trail connections and the public’s enjoyment of the Reservation.

10. **Community Need: In 100 words or less provide a brief statement of the need for and the benefits to the community.**

The Ridge Hill Reservation Trail system contains 350 acres of open field, pine & mixed hardwood forest, swampland and two eskers (long, narrow ridges formed by glacial rivers) that provide a place for people to enjoy Needham’s natural resources by walking, running, hiking, nature study, horseback riding, cross country skiing and snowshoeing allowing year round access to activities that promote public health. Specifically, the Swamp Trail and the Charles River Trail are as much a resource for traveling as they are a destination for exercise, having fun, exploring nature, and observing the natural environment and their reconstruction is critical to maintaining the existing trail network at Ridge Hill Reservation.

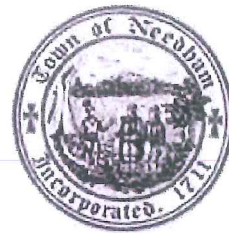
Note: *This application enables the Community Preservation Committee to review the request to assess eligibility. You shall be notified by January 1 of your eligibility. If eligible you will be requested to supply additional information by February 1.*

REPORT

for

TOWN OF NEEDHAM
RIDGE HILL RESERVATION
SWAMP TRAIL BOARDWALK
CHARLES RIVER BRIDGE

Prepared For:
Town of Needham, Massachusetts



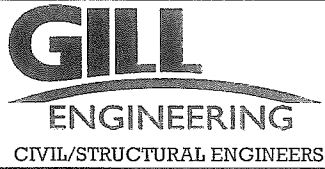
Construction Cost Estimate

July, 2013

Prepared by:



200 Highland Avenue
Needham, MA 02494



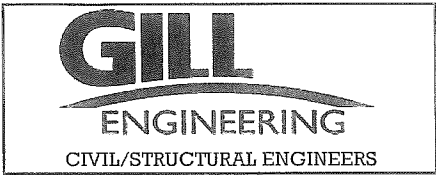
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|----------|----------------------------|----------|-----------|
| CLIENT | TOWN OF NEEDHAM, MA | PAGE | 1 of 5 |
| PROJECT | RIDGE HILL BOARDWALK | CALC BY | SEK |
| BRIDGE # | SWAMP TRAIL, CHARLES RIVER | CHECK BY | PDM |
| SUBJECT | COST ESTIMATE | DATE | 7/29/2013 |

TOWN OF NEEDHAM
SWAMP TRAIL BOARDWALK AND CHARLES RIVER BRIDGE
CONSTRUCTION COST ESTIMATE - SUMMARY

| ITEMS | QUANTITY | UNIT | UNIT PRICE | TOTAL PRICE |
|--|--------------------|------|------------|-------------|
| 191. DRIVE SAMPLE BORINGS | 100 | LF | \$ 50 | \$ 5,000 |
| 193. MOBILIZATION AND DISMANTILING OF BORING EQUIPMENT | 1 | LS | \$ 5,000 | \$ 5,000 |
| 697. SEDIMENTATION FENCE | 1971.32 | LF | \$ 3 | \$ 5,914 |
| 767.8 STRAW BALES FOR EROSION CONTROL | 492.83 | EA | \$ 13 | \$ 6,407 |
| 748.01 MOBILIZATION | 1 | LS | \$ 12,000 | \$ 12,000 |
| 748.02 MATERIAL TRANSPORT & STAGING | 1 | LS | \$ 9,000 | \$ 9,000 |
| 949.01 HELICAL PILE FOUNDATIONS | 1740 | FT | \$ 55 | \$ 95,700 |
| 949.02 SHALLOW PILE FOUNDATIONS | 22 | EA | \$ 575 | \$ 12,650 |
| 955.011 TIMBER BOARDWALK WITH CURB - 3 FT WIDE | 2400 | SF | \$ 34.00 | \$ 81,600 |
| 955.012 TIMBER BOARDWALK WITH CURB - 4 FT WIDE | 670 | SF | \$ 32.00 | \$ 21,440 |
| 955.013 TIMBER BOARDWALK WITH CURB - 5 FT WIDE | 90 | SF | \$ 56.00 | \$ 5,040 |
| | | | | \$ 259,751 |
| | CONTINGENCY @ | 15% | | \$ 38,963 |
| | TOTAL PROJECT COST | | | \$ 298,713 |

NOTES:

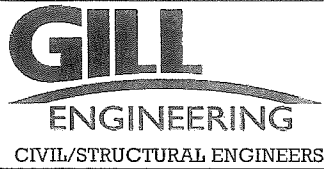
1. COSTS FOR SELECTIVE CLEARING AND TREE TRIMMING HAS NOT BEEN INCLUDED. IT IS UNDERSTOOD THAT THIS WORK WILL BE PERFORMED BY THE TOWN OF NEEDHAM.
2. IT HAS BEEN ASSUMED THAT WETLANDS RESTORATION WILL NOT BE NECESSARY, AND NO COSTS HAVE BEEN INCLUDED IN THIS ESTIMATE.
3. IT IS ASSUMED THAT NO EQUIPMENT WILL BE USED WITHIN THE WETLANDS. ALL CONSTRUCTION MATERIALS WILL BE DELIVERED TO ONE END OR THE OTHER VIA ATV, THEN CARRIED MANUALLY ON FOOT INTO THE WETLAND. ALL CONSTRUCTION WILL BE PERFORMED USING HANDHELD TOOLS AND EQUIPMENT.



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| CLIENT | TOWN OF NEEDHAM, MA | PAGE | 2 of 5 |
| PROJECT | RIDGE HILL BOARDWALK | CALC BY | SEK |
| BRIDGE # | SWAMP TRAIL, CHARLES RIVER | CHECK BY | PDM |
| SUBJECT | COST ESTIMATE | DATE | 7/29/2013 |

TOWN OF NEEDHAM
SWAMP TRAIL BOARDWALK AND CHARLES RIVER BRIDGE
CONSTRUCTION COST ESTIMATE - QUANTITY ESTIMATE

| 955.01 TIMBER BRDWLK WITH CURB - 3 FT WIDE | | | | 949.02 SHLLW | 949.01 HELICAL ANCHOR FOUNDATIONS | | | | |
|---|-------|--------|------|-----------------|-----------------------------------|----------------------|----------------------------|----------------------|--------------------------|
| SPAN | WIDTH | LENGTH | AREA | NO. OF FNDS | NO. OF VERT PILES | LG/VERT PILE (FT) | TOTAL VERT PILE LG (FT) | NO. OF INCL PILES | LG OF INCL PILES (FT) |
| 11 | 3 | 13.6 | 41 | | 2 | 15 | 30 | | |
| 12 | 3 | 18 | 54 | | 2 | 10 | 20 | 1 | 12 |
| 13 | 3 | 18 | 54 | | 2 | 15 | 30 | | |
| 14 | 3 | 15.2 | 46 | | 2 | 15 | 30 | 1 | 17 |
| 15 | 3 | 17.83 | 53 | | 2 | 15 | 30 | 1 | 17 |
| 16 | 3 | 18 | 54 | | 2 | 15 | 30 | | |
| 17 | 3 | 14.25 | 43 | | 2 | 15 | 30 | 1 | 17 |
| 18 | 3 | 18 | 54 | | 2 | 15 | 30 | | |
| 19 | 3 | 11.65 | 35 | | 2 | 10 | 20 | | |
| 20 | 3 | 18 | 54 | | 2 | 10 | 20 | 1 | 12 |
| 21 | 3 | 18 | 54 | | 2 | 10 | 20 | | |
| 22 | 3 | 17.4 | 52 | | 2 | 13 | 26 | 1 | 15 |
| 23 | 3 | 14.85 | 45 | | 2 | 15 | 30 | 1 | 17 |
| 24 | 3 | 14.85 | 45 | | 2 | 12 | 24 | 1 | 14 |
| 25 | 3 | 10.27 | 31 | | 2 | 9 | 18 | | |
| 26 | 3 | 10.66 | 32 | | 2 | 9 | 18 | | |
| 27 | 3 | 18 | 54 | | 2 | 10 | 20 | | |
| 28 | 3 | 13.58 | 41 | | 2 | 10 | 20 | | |
| 29 | 3 | 13.58 | 41 | | 2 | 10 | 20 | | |
| 30 | 3 | 13.08 | 39 | | 2 | 10 | 20 | 1 | 12 |
| 31 | 3 | 15.77 | 47 | | 2 | 11 | 22 | | |
| 32 | 3 | 15.67 | 47 | | 2 | 11 | 22 | | |
| 33 | 3 | 15.53 | 47 | | 2 | 11 | 22 | 1 | 13 |
| 34 | 3 | 14.96 | 45 | | 2 | 12 | 24 | | |
| 35 | 3 | 14.96 | 45 | | 2 | 11 | 22 | 1 | 13 |
| 36 | 3 | 15.29 | 46 | | 2 | 10 | 20 | 1 | 12 |
| 37 | 3 | 15.29 | 46 | | 2 | 9 | 18 | | |
| 38 | 3 | 15.29 | 46 | | 2 | 9 | 18 | 1 | 10 |
| 39 | 3 | 17.96 | 54 | | 2 | 8 | 16 | | |
| 40 | 3 | 17.53 | 53 | | 2 | 9 | 18 | 1 | 10 |
| 41 | 3 | 13.87 | 42 | | 2 | 10 | 20 | | |
| 42 | 3 | 13.87 | 42 | | 2 | 11 | 22 | 1 | 13 |
| 43 | 3 | 15.12 | 45 | | 2 | 12 | 24 | | |
| 44 | 3 | 15.12 | 45 | | 2 | 13 | 26 | 1 | 15 |
| 45 | 3 | 18 | 54 | | 2 | 14 | 28 | | |
| 46 | 3 | 6.39 | 19 | | 2 | 15 | 30 | | |
| 47 | 3 | 18 | 54 | | 2 | 15 | 30 | 2 | 17 |
| 48 | 3 | 17.39 | 52 | | 2 | 15 | 30 | | |
| 49 | 3 | 17.21 | 52 | | 2 | 15 | 30 | 1 | 17 |
| 50 | 3 | 10.31 | 31 | | 2 | 15 | 30 | | |
| 51 | 3 | 10.31 | 31 | | 2 | 15 | 30 | | |
| 52 | 3 | 17.95 | 54 | | 2 | 15 | 30 | 1 | 17 |



| | | | |
|----------|----------------------------|----------|-----------|
| CLIENT | TOWN OF NEEDHAM, MA | PAGE | 3 of 5 |
| PROJECT | RIDGE HILL BOARDWALK | CALC BY | SEK |
| BRIDGE # | SWAMP TRAIL, CHARLES RIVER | CHECK BY | PDM |
| SUBJECT | COST ESTIMATE | DATE | 7/29/2013 |

TOWN OF NEEDHAM
SWAMP TRAIL BOARDWALK AND CHARLES RIVER BRIDGE
CONSTRUCTION COST ESTIMATE - QUANTITY ESTIMATE

| | | | | | | | | | |
|----|---|-------|----|--|---|----|----|---|----|
| 53 | 3 | 18 | 54 | | 2 | 14 | 28 | 1 | 16 |
| 54 | 3 | 18 | 54 | | 2 | 14 | 28 | 1 | 16 |
| 55 | 3 | 18 | 54 | | 2 | 13 | 26 | | |
| 56 | 3 | 13.99 | 42 | | 2 | 12 | 24 | | |
| 57 | 3 | 13.99 | 42 | | 2 | 11 | 22 | 1 | 13 |
| 58 | 3 | 18 | 54 | | 2 | 10 | 20 | 2 | 12 |
| 59 | 3 | 9.92 | 30 | | 2 | 10 | 20 | | |
| 60 | 3 | 9.92 | 30 | | 2 | 10 | 20 | 1 | 12 |
| 61 | 3 | 16.28 | 49 | | 2 | 10 | 20 | | |
| 62 | 3 | 12.49 | 37 | | 2 | 10 | 20 | 1 | 12 |
| 63 | 3 | 12.98 | 39 | | 4 | 10 | 40 | | |

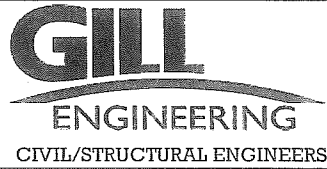
| | | | |
|--------------|------|------|-----|
| TOTAL 955.01 | 2400 | 1286 | 350 |
|--------------|------|------|-----|

| 955.02 TIMBER BRDWLK WITH CURB - 4 FT WIDE | | | | 949.02 SHLLW | 949.01 HELICAL ANCHOR FOUNDATIONS | | | | |
|---|-------|--------|------|-----------------|-----------------------------------|----------------------|----------------------------|----------------------|--------------------------|
| SPAN | WIDTH | LENGTH | AREA | NO. OF FNDS | NO. OF VERT PILES | LG/VERT PILE (FT) | TOTAL VERT PILE LG (FT) | NO. OF INCL PILES | LG OF INCL PILES (FT) |
| 1 | 4 | 18 | 72 | 2 | | | | | |
| 2 | 4 | 18 | 72 | 2 | | | | | |
| 3 | 4 | 18 | 72 | 2 | | | | | |
| 4 | 4 | 18 | 72 | 2 | | | | | |
| 5 | 4 | 18 | 72 | 4 | | | | | |
| 6 | 4 | 17 | 68 | 2 | | | | | |
| 7 | 4 | 17 | 68 | 2 | | | | 1 | 12 |
| 8 | 4 | 13.5 | 54 | | 2 | 11 | 22 | | |
| 9 | 4 | 13 | 52 | | 2 | 13 | 26 | | |
| 10 | 4 | 17 | 68 | | 2 | 15 | 30 | 1 | 12 |
| TOTAL ITEM 955.02 | | | | 670 | 18 | | 78 | | 24 |

| 955.03 TIMBER BRDWLK WITH CURB - 5 FT WIDE | | | | 949.02 SHLLW | 949.01 HELICAL ANCHOR FOUNDATIONS | | | | |
|---|-------|--------|------|-----------------|-----------------------------------|----------------------|----------------------------|----------------------|--------------------------|
| SPAN | WIDTH | LENGTH | AREA | NO. OF FNDS | NO. OF VERT PILES | LG/VERT PILE (FT) | TOTAL VERT PILE LG (FT) | NO. OF INCL PILES | LG OF INCL PILES (FT) |
| CH RIV | 5 | 18 | 90 | 4 | | | | | |
| TOTAL ITEM 955.03 | | | | 90 | 4 | | | | |

| 102. SELECTIVE CLEARING AND THINNING | | | | |
|--------------------------------------|-------|--------|---------|------------|
| | WIDTH | LENGTH | AREA SF | AREA ACRES |
| 3 FEET WIDTH | 7 | 800.16 | 5601.12 | 0.1286 |
| 4 FEET WIDTH | 8 | 167.5 | 1340 | 0.0308 |
| 5 FEET WIDTH | 9 | 18 | 162 | 0.0037 |
| TOTAL ITEM 101 | | 985.66 | 1502 | 0.0345 |

NOTE: SELECTIVE CLEARING AND TREE TRIMMING - NOT INCLUDED, TO BE PERFORMED BY TOWN OF NEEDHAM



| | | | |
|----------|----------------------------|----------|-----------|
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| PROJECT | RIDGE HILL BOARDWALK | CALC BY | SEK |
| BRIDGE # | SWAMP TRAIL, CHARLES RIVER | CHECK BY | PDM |
| SUBJECT | COST ESTIMATE | DATE | 7/29/2013 |

TOWN OF NEEDHAM
SWAMP TRAIL BOARDWALK AND CHARLES RIVER BRIDGE
CONSTRUCTION COST ESTIMATE - UNIT PRICE JUSTIFICATION

FROM WEIGHTED AVERAGE UNIT PRICES

| | | | |
|-------|-------------------------------------|----------|------|
| 102. | SELECTIVE CLEARING AND THINNING | \$ 9,000 | ACRE |
| 191. | DRIVE SAMPLE BORINGS | \$ 50 | FT |
| 193. | MOBILIZATION AND DISMANTLING OF BOR | \$ 5,000 | LS |
| 697. | SEDIMENTATION FENCE | \$ 3 | FT |
| 767.8 | STRAW BALES FOR EROSION CONTROL | \$ 13 | EA |

748.01 MOBILIZATION

| | | |
|---------------------------|--|------------|
| TOTAL PROJECT COST APPROX | | \$ 400,000 |
| MOBILIZATION AT | | 3% |
| TOTAL LS | | \$ 12,000 |

748.02 MATERIAL TRANSPORT & STAGING

| | | |
|------------------|----|------------|
| NO. OF SPANS | 64 | SPANS |
| PRODUCTION RATE | 4 | SPANS / WK |
| PROJECT DURATION | 16 | WEEKS |

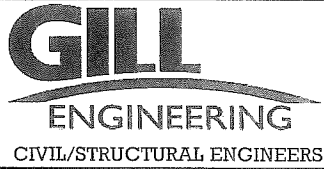
| | | | |
|---------------|---------|--|---------|
| | \$/WEEK | | COST |
| BOBCAT RENTAL | \$300 | | \$4,800 |
| 1 LABORER | \$240 | | \$3,840 |
| TOTAL LS | | | \$8,640 |
| USE | | | \$9,000 |

949.01 HELICAL PILE FOUNDATIONS

| ALEWIFE BROOK GREENWAY BOARDWALK BIDS | | | | UNIT PRICE | | | TOTAL PRICE | | |
|---------------------------------------|--------------|--------|------|--------------|-----------|------------------------------|-------------|---------|-----------|
| | | QTY | UNIT | OFFICE | LOW BID | AVG 2 - 5 | OFFICE | LOW BID | AVG 2 - 5 |
| 656.03 | SQ SHAFT | 6,069 | FT | 24.00 | 20.00 | 17.00 | 145,656 | 121,380 | 103,173 |
| 656.04 | PIPE RISER | 1,190 | FT | 41.00 | 21.00 | 17.25 | 48,790 | 24,990 | 20,528 |
| 656.05 | SQ SHAFT | 2,408 | FT | 31.00 | 29.00 | 23.50 | 74,648 | 69,832 | 56,588 |
| 656.06 | SQ SHAFT | 5,622 | FT | 38.00 | 34.00 | 32.88 | 213,636 | 191,148 | 184,851 |
| 656.07 | SQ SHAFT | 970 | FT | 53.00 | 31.00 | 25.00 | 51,410 | 30,070 | 24,250 |
| 656.08 | SQ SHAFT | 1 | FT | 58.00 | 120.00 | 31.50 | 58 | 120 | 32 |
| 656.09 | BRACKET | 50 | EA | 64.00 | 54.00 | 65.25 | 3,200 | 2,700 | 3,263 |
| 656.10 | BRACKET | 352 | EA | 52.00 | 49.00 | 65.25 | 18,304 | 17,248 | 22,968 |
| 656.11 | ANGLE BRACK | 282 | EA | 70.00 | 72.00 | 65.25 | 19,740 | 20,304 | 18,401 |
| 656.12 | ANGLE BRACK | 47 | EA | 115.00 | 72.00 | 65.25 | 5,405 | 3,384 | 3,067 |
| 656.13 | MOB | 1 | LS | 27,000.00 | 14,000.00 | 7,600.00 | 27,000 | 14,000 | 7,600 |
| 656.14 | PILE LD TEST | 5 | EA | 10,000.00 | 4,500.00 | 3,362.50 | 50,000 | 22,500 | 16,813 |
| TOTAL LG | | 16,260 | FT | | | | 657,847 | 517,676 | 461,532 |
| | | | | PRICE / FOOT | \$ 40.46 | \$ 31.84 | \$ 28.38 | | |
| | | | | | | SAY | \$ 32.00 | | |
| | | | | | | PREMIUM FOR DIFFICULT SITE | 50% | | |
| | | | | | | PREMIUM FOR SMALLER QUANTITY | 10% | | |
| | | | | | | | \$ 52.80 | | |
| | | | | | | USE | \$ 55.00 | | |

949.02 SHALLOW PILE FOUNDATIONS

| | | |
|----------------------------|--|----------|
| FOUNDATION MATERIALS (EA) | | \$ 450 |
| 2-man crew per day | | \$ 1,000 |
| Assumed production per day | | 8 |
| TOTAL COST PER EACH | | \$575.00 |



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| PROJECT | RIDGE HILL BOARDWALK | CALC BY | SEK |
| BRIDGE # | SWAMP TRAIL, CHARLES RIVER | CHECK BY | PDM |
| SUBJECT | COST ESTIMATE | DATE | 7/29/2013 |

TOWN OF NEEDHAM
SWAMP TRAIL BOARDWALK AND CHARLES RIVER BRIDGE
CONSTRUCTION COST ESTIMATE - UNIT PRICE JUSTIFICATION

955.011 TIMBER BOARDWALK WITH CURB - 3 FT WIDE

| | NO. | WIDTH | | THICKNESS | LENGTH | VOLUME SF | VOLUME BF |
|---------|-----|-------|--|-----------|--------|-----------|-----------|
| JOISTS | 6 | 2 | | 12 | 216 | 31104 | 216.00 |
| BEAM | 2 | 2 | | 12 | 5 | 240 | 1.67 |
| CURB | 2 | 4 | | 4 | 216 | 6912 | 48.00 |
| DECKING | 9 | 2 | | 6 | 48 | 5184 | 36.00 |

| | |
|----------------------------|----------|
| TOTAL BF | 301.67 |
| COST/FMB \$ | 8.00 |
| JOIST HANGERS \$ | 30.00 |
| TOTAL COST PER 18' SPAN \$ | 2,443.33 |
| AREA PER 18' SPAN | 72.00 |
| COST/SF | \$ 34.00 |

955.012 TIMBER BOARDWALK WITH CURB - 4 FT WIDE

| | NO. | WIDTH | | THICKNESS | LENGTH | VOLUME SF | VOLUME BF |
|---------|-----|-------|--|-----------|--------|-----------|-----------|
| JOISTS | 7 | 2 | | 12 | 216 | 36288 | 252.00 |
| BEAM | 2 | 2 | | 12 | 5 | 240 | 1.67 |
| CURB | 2 | 4 | | 4 | 216 | 6912 | 48.00 |
| DECKING | 9 | 2 | | 6 | 60 | 6480 | 45.00 |

| | |
|----------------------------|----------|
| TOTAL BF | 346.67 |
| COST/FMB \$ | 8.00 |
| JOIST HANGERS \$ | 30.00 |
| TOTAL COST PER 18' SPAN \$ | 2,803.33 |
| AREA PER 18' SPAN | 90.00 |
| COST/SF | \$ 32.00 |

955.013 TIMBER BOARDWALK WITH CURB - 5 FT WIDE

| | NO. | W | | T | LENGTH | VOLUMNE | FMB |
|-----------|-----|---|--|----|--------|---------|-------|
| JOISTS | 7 | 2 | | 12 | 216 | 36288 | 252.0 |
| BEAM | 2 | 2 | | 12 | 5 | 240 | 1.7 |
| CURB | 2 | 4 | | 4 | 216 | 6912 | 48.0 |
| DECKING | 9 | 2 | | 6 | 60 | 6480 | 45.0 |
| TOP RAIL | 2 | 2 | | 6 | 216 | 5184 | 36.0 |
| RAIL | 8 | 2 | | 4 | 216 | 13824 | 96.0 |
| RAIL POST | 6 | 6 | | 6 | 60 | 12960 | 90.0 |

| | |
|----------------------------|----------|
| | 568.7 |
| COST/FMB \$ | 8.00 |
| JOIST HANGERS \$ | 30.00 |
| RAIL ATTACHMENTS \$ | 450.00 |
| TOTAL COST PER 18' SPAN \$ | 5,029.33 |
| AREA PER 18' SPAN | 90.00 |
| COST/SF | \$ 56.00 |

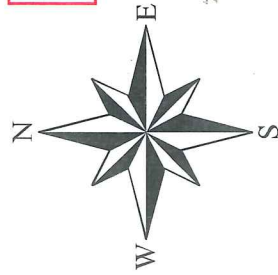


EXHIBIT A - SITE LOCATION MAP

